

Page 2

Amended Claims

Please replace the pending claims with those listed below, which supercede and replace any previously listed claims.

1. (Original) Apparatus for configuring a process control system, the apparatus comprising:
 - a plurality of objects, each object representing an entity, and each object being associated with an object type,
 - at least one object ("connection" object) identifying permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,
 - the apparatus validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the connection object.
2. (Original) Apparatus according to claim 1, wherein the connection object specifies a role that one or more object types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.
3. (Original) Apparatus according to claim 2, wherein
 - one or more object types are associated in a hierarchical relationship, and wherein the apparatus validates a potential relationship between two objects via the existence of a connection object identifying as permissible a relationship between any of (i) object types associated with those two objects, and (ii) object types that are hierarchically related to the object types associated with those two objects.
4. (Original) Apparatus according to claim 1, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between objects.

Page 3

5. (Original) Apparatus according to claim 4, wherein the connection object specifies a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.
6. (Original) Apparatus according to claim 5, wherein the connection object identifies, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.
7. (Original) Apparatus according to claim 5, wherein the connection object identifies, for an object that may serve in a child role, any of a weight and other quantitative attribute (collectively, "weight") associated with that object, and the connection object identifies, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role.
8. (Original) Apparatus according to claim 1, wherein the source/sink relationship is indicative of a peer-to-peer relationship between objects.
9. (Original) Apparatus according to claim 8, wherein the connection object specifies a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.
10. (Original) Apparatus according to claim 9, wherein the connection object identifies, for an object that may serve in a source role, any of a minimum and maximum number of relationships that object may support with objects that serve in a sink role.
11. (Original) Apparatus according to claim 9, wherein the connection object identifies, for an object that may serve in a sink role, any of a minimum and maximum number of relationships that object may support with objects that serve in a source role.
12. (Original) Apparatus for configuring a process control system, the apparatus comprising:
a plurality of objects, each object representing an entity, and each object being associated with an object type,

Page 4

at least one object ("connection" object) identifying permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

the apparatus at least initially validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the connection object,

the connection object identifying validated relationships established between objects.

13. (Original) Apparatus according to claim 12, wherein the connection object specifies a role that an object serves in a relationship with any of itself and another object, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.
14. (Original) Apparatus according to claim 12, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) the apparatus for configuring the control system.
15. (Original) Apparatus according to claim 14, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.
16. (Original) Apparatus according to claim 12, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between objects.
17. (Original) Apparatus according to claim 16, wherein the connection object specifies a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.
18. (Original) Apparatus according to claim 17, wherein the connection object identifies, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.
19. (Original) Apparatus according to claim 17, wherein

Page 5

the connection object identifies, for an object that may serve in a child role, any of a weight and other quantitative attribute (collectively, "weight") associated with that object, and

the connection object identifies, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role.

20. (Original) Apparatus according to claim 12, wherein the source/sink relationship is indicative of a peer-to-peer relationship between objects.

21. (Original) Apparatus according to claim 20, wherein the connection object specifies a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.

22. (Original) Apparatus according to claim 21, wherein the connection object identifies, for an object that may serve in a source role, any of a minimum and maximum number of relationships that object may support with objects that serve in a sink role.

23. (Original) Apparatus according to claim 21, wherein the connection object identifies, for an object that may serve in a sink role, any of a minimum and maximum number of relationships that object may support with objects that serve in a source role.

24. (Original) Apparatus for configuring a process control system, the apparatus comprising:

one or more objects, each object representing an entity and each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

at least one object ("second connection" object) identifying permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

the apparatus establishing a relationship between one or more parameters of one or more objects by comparing the types of those parameters with the types identified by the second connection object.

Page 6

25. (Original) Apparatus according to claim 24, wherein the apparatus establishes relationships between the parameters of objects, which objects have been selected by a user.
26. (Original) Apparatus according to claim 26, wherein the apparatus establishes relationships between the parameters of objects, which objects that have been selected by the user for potential relationship and between which objects such potential relationship has been validated.
27. (Original) Apparatus according to claim 26,
each object is associated with an object type, and wherein
the apparatus validates a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by a first connection object.
28. (Original) Apparatus according to claim 24, wherein the second connection object specifies a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.
29. (Original) Apparatus according to claim 24, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.
30. (Original) Apparatus according to claim 24, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.
31. (Original) Apparatus according to claim 30, wherein the second connection object specifies a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.
32. (Original) Apparatus according to claim 31, wherein the second connection object identifies, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.

Page 7

33. (Original) Apparatus according to claim 31, wherein the second connection object identifies, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.

34. (Original) Apparatus for configuring a process control system, the apparatus comprising:

one or more objects, each object representing an entity and each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

at least one object ("second connection" object) identifying permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

the apparatus establishing a relationship between one or more parameters of one or more objects by comparing the types of those parameters with the types identified by the second connection object,

the second connection object identifying validated relationships established between parameters.

35. (Original) Apparatus according to claim 34, wherein the second connection object specifies a role that a parameter serves in a relationship with any of itself and another parameter, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.

36. (Original) Apparatus according to claim 34, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) the apparatus for configuring the control system.

37. (Original) Apparatus according to claim 36, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.

38. (Original) Apparatus according to claim 37, wherein each parameter has one or more attributes, and wherein the attributes of a parameter define any of the following with the respect to

Page 8

the characteristic to which the parameter pertains: name, grouping, display label, data type, behavior, help information, edit type, data value range, data value, formula definition, and display format.

39. (Original) Apparatus according to claim 34, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.

40. (Original) Apparatus according to claim 34, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.

41. (Original) Apparatus according to claim 40, wherein the second connection object specifies a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.

42. (Original) Apparatus according to claim 41, wherein the second connection object identifies, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.

43. (Original) Apparatus according to claim 41, wherein the second connection object identifies, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.

44. (Original) Apparatus for configuring a process control system, the apparatus comprising:

one or more objects, each representing an entity and each being associated with an object type,

each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

at least one object ("first connection" object) identifying permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

Page 9

at least one object ("second connection" object) identifying permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

the apparatus validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the first connection object, and

the apparatus establishing a relationship between one or more parameters of one or more objects for which a potential relationship has been validated, the relationship between parameters being established by comparing the types of those parameters with the types identified by the second connection object.

45. (Original) Apparatus according to claim 44, wherein the apparatus establishes validates a potential relationship between objects selected by a user.

46. (Original) Apparatus according to claim 44, wherein

the first connection object specifies a role that one or more object types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship, and

the second connection object specifies a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.

47. (Original) Apparatus according to claim 44, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.

48. (Original) Apparatus according to claim 47, wherein the first connection object specifies a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.

49. (Original) Apparatus according to claim 48, wherein the first connection object identifies, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.

Page 10

50. (Original) Apparatus according to claim 48, wherein

the first connection object identifies, for an object that may serve in a child role, any of a weight and other quantitative attribute (collectively, "weight") associated with that object, and

the first connection object identifies, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role.

51. (Original) Apparatus according to claim 44, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.

52. (Original) Apparatus according to claim 51, wherein the second connection object specifies a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.

53. (Original) Apparatus according to claim 52, wherein the second connection object identifies, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.

54. (Original) Apparatus according to claim 52, wherein the second connection object identifies, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.

55. (Original) Apparatus according to claim 44, wherein

the first connection object identifying validated relationships established between objects, and

the second connection object identifying validated relationships established between parameters.

56. (Original) Apparatus according to claim 44, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) the apparatus for configuring the control system.

Page 11

57. (Original) Apparatus according to claim 56, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.

58. (Original) Apparatus according to claim 57, wherein each parameter has one or more attributes, and wherein the attributes of a parameter define any of the following with respect to the characteristic to which the parameter pertains: name, grouping, display label, data type, behavior, help information, edit type, data value range, data value, formula definition, and display format.

59. (Original) A method for configuring a control system, the method comprising the steps of:

representing a plurality of entities with objects, each being associated with an object type, identifying, with at least one object ("connection" object), permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the connection object.

60. (Original) A method according to claim 59, comprising the step of specifying, with the connection object, a role that one or more object types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.

61. (Original) A method according to claim 60, comprising the steps of

associating one or more objects in a hierarchical relationship, and wherein

validating a potential relationship between two objects via the existence of a connection object identifying as permissible a relationship between any of (i) object types associated with those two objects, and (ii) object types that are hierarchically related to the object types associated with those two objects.

Page 12

62. (Original) A method according to claim 59, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between objects.
63. (Original) A method according to claim 62, comprising the step of specifying, with the connection object, a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.
64. (Original) A method according to claim 63, comprising the step of identifying, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.
65. (Original) A method according to claim 63, comprising the steps of identifying, for an object that may serve in a child role, any of a weight and other quantitative attribute (collectively, "weight") associated with that object, and identifying, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role.
66. (Original) A method according to claim 59, wherein the source/sink relationship is indicative of a peer-to-peer relationship between objects.
67. (Original) A method according to claim 66, comprising the step of specifying, with the connection object, a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.
68. (Original) A method according to claim 67, comprising the step of identifying, for an object that may serve in a source role, any of a minimum and maximum number of relationships that object may support with objects that serve in a sink role.
69. (Original) A method according to claim 67, comprising the step of identifying, for an object that may serve in a sink role, any of a minimum and maximum number of relationships that object may support with objects that serve in a source role.
70. (Original) A method for configuring a control system, the method comprising the steps of:

Page 13

representing a plurality of entities with objects, each being associated with an object type, identifying, with at least one object ("connection" object), permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,
at least initially validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the connection object,
identifying, with the connection object, validated relationships established between objects.

71. (Original) A method according to claim 70, comprising the step of specifying, with the connection object, a role that an object serves in a relationship with any of itself and another object, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.
72. (Original) A method according to claim 70, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) an apparatus for configuring the control system.
73. (Original) A method according to claim 72, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.
74. (Original) A method according to claim 70, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between objects.
75. (Original) A method according to claim 74, comprising the step of specifying, with the connection object, a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.
76. (Original) A method according to claim 75, comprising the step of identifying, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.

Page 14

77. (Original) A method according to claim 75, comprising the steps of
- identifying, for an object that may serve in a child role, any of a weight and other quantitative attribute (collectively, "weight") associated with that object, and
- identifying, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role.
78. (Original) A method according to claim 70, wherein the source/sink relationship is indicative of a peer-to-peer relationship between objects.
79. (Original) A method according to claim 78, comprising the step of specifying, with the connection object, a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.
80. (Original) A method according to claim 79, comprising the step of identifying, for an object that may serve in a source role, any of a minimum and maximum number of relationships that object may support with objects that serve in a sink role.
81. (Original) A method according to claim 79, comprising the step of identifying, for an object that may serve in a sink role, any of a minimum and maximum number of relationships that object may support with objects that serve in a source role.
82. (Original) A method for configuring a control system, the method comprising the steps of:
- representing one or more entities with objects, each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,
- identifying, with at least one object ("second connection" object), permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,
- establishing a relationship between one or more parameters of one or more objects by comparing the types of those parameters with the types identified by the second connection object.

Page 15

83. (Original) A method according to claim 82, comprising the step of establishing relationships between the parameters of objects that have been selected by a user.
84. (Amended) A method according to claim 83-84, comprising the step of establishing relationships between the parameters of objects that have been selected by the user for potential relationship and between which such potential relationship has been validated.
85. (Original) A method according to claim 84, wherein
 - each object is associated with an object type,
 - the method comprising the step of establishing a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by a first connection object.
86. (Original) A method according to claim 82, comprising the step of specifying, with the second connection object, a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.
87. (Original) A method according to claim 82, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.
88. (Original) A method according to claim 82, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.
89. (Original) A method according to claim 88, comprising the step of specifying, with the second connection object, a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.
90. (Original) A method according to claim 89, comprising the step of identifying, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.

Page 16

91. (Original) A method according to claim 89, comprising the step of identifying, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.

92. (Original) A method for configuring a control system, the method comprising the steps of:

representing one or more entities with objects, each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

identifying, with at least one object ("second connection" object), permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

establishing a relationship between one or more parameters of one or more objects by comparing the types of those parameters with the types identified by the second connection object,

identifying, with the second connection object, validated relationships established between parameters.

93. (Original) A method according to claim 92, comprising the step of specifying, with the second connection object, a role that a parameter serves in a relationship with any of itself and another parameter, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.

94. (Original) A method according to claim 92, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) an apparatus for configuring the control system.

95. (Original) A method according to claim 94, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.

96. (Original) A method according to claim 95, wherein each parameter has one or more attributes, and wherein the attributes of a parameter define any of the following with the respect to

Page 17

the characteristic to which the parameter pertains: name, grouping, display label, data type, behavior, help information, edit type, data value range, data value, formula definition, and display format.

97. (Original) A method according to claim 92, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.

98. (Original) A method according to claim 92, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.

99. (Original) A method according to claim 98, comprising the step of specifying, with the second connection object, a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.

100. (Original) A method according to claim 99, comprising the step of identifying, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.

101. (Original) A method according to claim 99, comprising the step of identifying, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.

102. (Original) A method for configuring a control system, the method comprising the steps of:

representing one or more entities with objects, each being associated with an object type, each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

identifying, with at least one object ("first connection" object), permissible combinations of object types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

Page 18

identifying, with at least one object ("second connection" object), permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

validating a potential relationship between objects by comparing the object types with which they are associated with permissible relationships identified by the first connection object, and

establishing a relationship between one or more parameters of one or more objects for which a potential relationship has been validated, the relationship between parameters being established by comparing the types of those parameters with the types identified by the second connection object.

103. (Original) A method according to claim 102, comprising the step of establishing validates a potential relationship between objects selected by a user.

104. (Original) A method according to claim 102, comprising the steps of specifying, with the first connection object, a role that one or more object types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship, and

specifying, with the second connection object, a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.

105. (Original) A method according to claim 102, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.

106. (Original) A method according to claim 105, comprising the step of specifying, with the first connection object, a role that an object may serve in a parent/child relationship, the roles including any of a parent role and a child role.

107. (Original) A method according to claim 106, comprising the step of identifying, for an object that may serve in a parent role, a capacity of that object to support relationships with objects that serve in a child role.

Page 19

108. (Original) A method according to claim 106, wherein

identifying, for an object that may serve in a child role, any of a weight and other quantitative attribute (collectively, "weight") associated with that object, and

identifying, for an object that may serve in a parent role, a capacity in weight of that object to support relationships with objects that serve in a child role.

109. (Original) A method according to claim 102, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.

110. (Original) A method according to claim 109, comprising the step of specifying, with the second connection object, a role that an object may serve in a source/sink relationship, the roles including any of a source role and a sink role.

111. (Original) A method according to claim 110, comprising the step of identifying, for a parameter that may serve in a source role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a sink role.

112. (Original) A method according to claim 110, comprising the step of identifying, for a parameter that may serve in a sink role, any of a minimum and maximum number of relationships that parameter may establish with parameters that serve in a source role.

113. (Original) A method according to claim 102, wherein

identifying, with the first connection object, validated relationships established between objects, and

identifying, with the second connection object, validated relationships established between parameters.

114. (Original) A method according to claim 102, wherein an object represents an entity within any of (i) a controlled system, (ii) the control system, (iii) a control level hierarchy, and (iv) an apparatus for configuring the control system.

Page 20

115. (Original) A method according to claim 114, wherein an entity includes any of a field device, control processor, block, loop, compound, historian, object type category, display placeholder, graphical display entity, and report.
116. (Original) A method according to claim 115, wherein each parameter has one or more attributes, and wherein the attributes of a parameter define any of the following with the respect to the characteristic to which the parameter pertains: name, grouping, display label, data type, behavior, help information, edit type, data value range, data value, formula definition, and display format.
117. (Original) Apparatus for configuring a process control system, the apparatus comprising:
one or more objects, each object representing an entity and each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,
at least one object ("second connection" object) identifying permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,
the apparatus validating a relationship between one or more parameters of one or more objects by comparing the types of those parameters with permissible relationships identified by the second connection object.
118. (Original) Apparatus according to claim 117, wherein the apparatus establishes relationships between the parameters selected by a user through any of a drag-and-drop operation, menu operation, or other operation.
119. (Original) Apparatus according to claim 117, wherein the second connection object specifies a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.
120. (Original) Apparatus according to claim 117, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.

Page 21

121. (Original) Apparatus according to claim 117, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.

122. (Original) A method for configuring a control system, the method comprising the steps of:

representing one or more entities with objects, each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

identifying, with at least one object ("second connection" object), permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

validating a relationship between one or more parameters of one or more objects by comparing the types of those parameters with permissible relationships identified by the second connection object.

123. (Original) Method according to claim 122, comprising establishing relationships between parameters selected by a user through any of a drag-and-drop operation, menu operation, or other operation.

124. (Original) Method according to claim 122, comprising specifying, with the second connection object, a role that one or more parameter types may serve in a relationship, the roles including (i) any of source and sink in a source/sink relationship, and (ii) any of parent and child in a parent/child relationship.

125. (Original) Method according to claim 122, wherein the parent/child relationship is indicative of any of a hierarchical and a containment relationship between parameters.

126. (Original) Method according to claim 122, wherein the source/sink relationship is indicative of a peer-to-peer relationship between parameters.

127. (Original) Apparatus for configuring a process control system, the apparatus comprising:

Page 22

one or more objects, each object representing an entity and each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

at least one object ("second connection" object) identifying permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship, and

the apparatus responding to establishment of a primary relationship ("master" relationship) between one or more parameters of one or more objects by establishing one or more secondary relationships ("slave" relationships) between parameters of those objects.

128. (Original) Apparatus according to claim 127, wherein the slave relationships are established between parameters related to those defining the master relationship.

129. (Original) Apparatus according to claim 128, wherein the apparatus establishes the master relationship between the parameters selected by a user through any of a drag-and-drop operation, menu operation, or other operation.

130. (Original) Apparatus according to claim 128, wherein the apparatus any of modifies and destroys a slave relationship upon any of modification and destruction of a corresponding master relationship.

131. (Original) Method for configuring a control system, the method comprising the steps of representing one or more entities with objects, each object being associated with one or more parameters that pertain to characteristics of the entity represented by the object, each parameter being associated with a parameter type,

identifying, with at least one object ("second connection" object), permissible combinations of parameter types that can form any of a parent/child relationship, a source/sink relationship, and other relationship,

responding to establishment of a primary relationship ("master" relationship) between one or more parameters of one or more objects by establishing one or more secondary relationships ("slave" relationships) between parameters of those objects.

Page 23

132. (Original) Method according to claim 131, comprising the step of establishing slave relationships between parameters related to those defining the master relationship.
133. (Original) Method according to claim 132, comprising the step of establishing the master relationship between the parameters selected by a user through any of a drag-and-drop operation, menu operation, or other operation.
134. (Original) Method according to claim 132, comprising the step of any of modifying and destroying a slave relationship upon any of modification and destruction of a corresponding master relationship.